



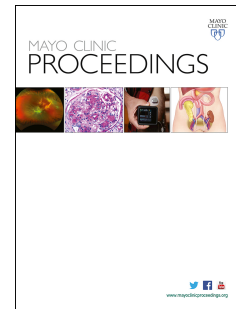
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Fit is It in COVID-19, Future Pandemics, and Overall Healthy Living

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Fit is It in COVID-19, Future Pandemics, and Overall Healthy Living

Substantial evidence supports the importance of fitness, especially cardiorespiratory fitness (CRF) and muscular fitness, to prevent and treat cardiovascular diseases (CVD).¹ In fact, patients with various chronic diseases, including obesity, dyslipidemia, and diabetes mellitus (DM) who present with a higher CRF often have a more favorable short-and long-term prognosis compared to individuals without these conditions but with low levels of CRF. This observation supports the importance of CRF as one of the strongest CVD risk factors or risk markers. In fact, through a recent American Heart Association Scientific Statement, we have called on clinicians to consider CRF as a health status “vital sign.”²

In this issue of the *Mayo Clinic Proceedings*, Brawner and colleagues³ from the Henry Ford Medical Group in Detroit, Michigan, reported on 246 patients in their healthcare system who had a prior exercise treadmill test to determine CRF as indicated by peak metabolic equivalents (METs) and who tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. The purpose of this study by Brawner et al was to determine the impact of CRF on hospitalization risk due to coronavirus disease 2019 (COVID-19). Importantly, their population was 75% African American (AA) with a mean body mass index (BMI) of 32.7 kg/m². They demonstrated that in their population (mean age 59 years; 42% male), peak METs were considerably lower (6.7+/-2.8 METs) in those hospitalized compared to those not hospitalized (8.0+/-2.4 METs; p< 0.001). Additionally, peak METs were inversely associated with a 17% lower risk of hospitalization in an un-adjusted analysis and 13% lower risk in adjusted analysis, once again supporting the importance of CRF on major health outcomes, including risk for hospitalization due to COVID -19.

Very recently, we suggested that physical activity (PA) may be important for immunity protection,⁴ as evidence suggests that higher PA, such as running, is associated with significant reductions in mortality risk attributed to respiratory diseases, pneumonia, and aspiration pneumonia, including in those with DM.^{4,5} However, considering the very low level of PA in our society,^{1,6} resulting in low levels of CRF, we recently suggested that the current state of physical inactivity and COVID-19 is a tale of 2 pandemics, highlighting how COVID-19 and global trends in physical inactivity and sedentary behavior are affected by one another.⁷ Indeed, regular PA and exercise has been shown to improve health and may be effective in reducing the occurrence, severity, and duration of respiratory tract infections.⁸ Also, we recently formed an organization for the global path forward-Healthy Living for Pandemic Event Protection (HL-PIVOT) whose overarching goal is to improve global health and protect individuals from the risks associated with chronic disease and viral infections.⁹

Improving exercise capacity, namely CRF, is an important target to reduce CVD risk, as lower CRF levels are clearly associated with increased incidence of CVD.¹ The severity of COVID-19 is also considerably worse in those individuals with a history of CVD or DM.^{10,11} In this context, increasing PA and CRF may reduce CVD and DM risk and improve prognosis in these conditions,^{1,4,5,7-9} including during COVID-19 and future pandemics.

We have recently discussed in *Mayo Clinic Proceedings* that patients with obesity have a considerably worse prognosis during COVID-19.^{12,13} This Henry Ford COVID -19 population was quite obese, having a mean BMI well into the obesity range.³ Improving PA and CRF may go a long way to reduce, prevent and treat obesity in the first place, as well as to prevent progression to more severe degrees,¹⁴ and improve prognosis in patients with obesity during COVID -19 and future pandemics.^{12,13}

We have recently discussed the higher risk for the AA population during COVID -19,¹⁵ partly explained by a higher risk of un-treated or under-treated hypertension and DM, as well as a much higher prevalence of obesity. Additionally, we have recently discussed that the AA population often have lower levels of CRF compared to Caucasians.¹⁶⁻¹⁸ Moreover, we have demonstrated AA individuals may have a lower improvement in CRF following participation in an exercise training program compared to Caucasian individuals.^{17, 19} In this Henry Ford population, which was 75% AA, overall levels of CRF were quite low, only 7.5 METs, for a relatively young population in the mid to upper 50s at the time of the exercise assessment. Therefore, increasing levels of CRF, possibly with high-intensity interval training, could help reduce obesity, DM, and CVD in the AA population and improve prognosis in future pandemics.^{1, 4, 5, 7-9, 12, 14} In this context, we feel that taking urgent measures to improve CRF in the AA population is needed to improve health in AAs, including for future pandemics.

We applaud this Henry Ford group for undertaking this study and demonstrating the impact of CRF in COVID-19 prognosis. Clearly this group and others may later study much larger cohorts to determine the impact of CRF on very severe COVID-19 conditions, such as intensive care unit admissions, need for mechanical ventilators, and death, as well as the relative impact of fitness versus fatness in COVID-19 prognosis.³ Clearly, greater efforts are needed to improve PA, as recent statistics demonstrate very low levels of PA and high levels of sedentary behavior and physical inactivity in both adults and children worldwide.⁶ Increasing PA and overall fitness, both CRF as well as muscular fitness,^{1, 20-24} is an essential approach to preventing CVD and adverse CVD outcomes,^{1, 20, 21, 23, 24} as well as likely improving prognosis in future pandemics,^{4, 7-9} supporting our assertion that “Fit is It!”

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